

Computer Final Revision



1st.Secondary ~ 1st.Term

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Topic one: An introduction to the project

What is meant by Atlas?

A way to explore the world through a book display geographic maps, and related to a specific topic like continents and countries. Examples of such Atlas: World Atlas, Atlas of Africa,

Multimedia

The term (multimedia) is composed of two parts: the first part is (Multi) and means multiplicity, and the second part is (Media) and it means media carrying different information such as (audio, image and video)

Advantages of Multimedia in Education

- 1-Saving the time and effort for both teacher and learner.
- 2-Making learning process enjoyable and interesting.
- 3-Grabbing attention of information presented, which facilitate understanding.
- 4-Providing a diversity of methods to display information which stimulate audio-visual senses.

Multimedia Elements

- 1. Data or Information
- 2. Hardware
- 3. Software

Problem solving stages

You may face some problems during the execution of project's stages.

1- Problem Definition:

Define the problem, required output and available inputs as an overview.

2- Determine the Outputs:

The outputs are the important information and results obtained after solving the problem.

3- Determine the Inputs:

The inputs are data available that can be obtained from several resources, such as books, encyclopedias and the Internet, etc., and these data will be processed to obtain the required output.

4- Develop an Algorithm:

We set a logical sequence of steps; these steps are called (Algorithm).

To illustrate this sequence of steps; many tools can be used the (Flowchart) is one of them.

5- Computer Coding:

We have already planned for solving the problem, when using computer we have to translate the steps of solving problem; into an application using one of the programming language.

6- Program Testing and debugging:

The aim of this phase is the implementation of the code that has been written, then testing this code using diverse values (input), displaying the results (output), and then making the necessary corrections in case of errors.

7- Program or Project Documentation:

You can document the program or project by doing the following:

- ~ Write the goal of the project ("programming project"), name of the programmer, creation date and the software version number.
- ~ Save program or project in the appropriate storage media.
- ~ Print program or project and keep the printed papers within a folder in a safe place.
- ~ Add Help or a guide for using program or project.
- ~ You can make an executable (EXE) version of the program or project; so that it runs directly through the operating system.



Topic Two: Managing Projects data

Create (Folder- File)

Right-Clicking with the mouse in free place on the Desktop, opens a shortcut menu; from which you choose the command New then Folder and then type the name of the folder; so a new folder is created with the name you specified

Naming (Folder- File)

Select a folder; and display its shortcut menu from which; choose the command Rename; to give a new name to the specified folder

Delete (Folder- File)

Select a folder; and display its shortcut menu from which; choose the command Delete; to delete the specified folder.

Search through the Internet:

search of information is done by using keywords.

There are many internet sites that offer search services, called Search Engines.

Search Engines:

- There are many famous Search Engines:
- ~ Search Engine www.google.com
- ~Yahoo Search Engine www.yahoo.com

Download the file (voice- video- image)

We can use the Internet to search for these files and save them on the computer.

Importance of encyclopedia

- -It provides an overview of one of the topics and the facts accompanied with articles, tables, images, forms, maps and bibliographic sources.

-Encyclopedias are characterized by the diversity and huge amount of different types of information displayed, and the easiness of searching and quick access.

Search inside electronic encyclopedia

- Encyclopedia is a distinct type of reference that shows a structured summary of knowledge in a particular field, and is arranged in accordance with a certain classification; that facilitates searching of required information such as:
- (Text- picture-Sound-Videos) alphabetic order.

Among the most important encyclopedias the Wikipedia

http://en.wikipedia.org/wiki/Main_Page

<http://ar.wikipedia.org/wiki/>

Organizing encyclopedias

There are two ways to organize information contained in encyclopedias:

- 1- Sorting by alphabet.
- 2- Sorting by scientific classification or by topics.

Topic Three: Collecting Project's data using

Spreadsheets applications

What are Spreadsheets?

A spreadsheet is a workbook made up of many different worksheets or spreadsheets.

A spreadsheet consists of columns and rows; it is made up of cells. A cell is the intersection of each row and column.

Columns

The columns headers are identified by alphabet letters: 'ABC,...'. These letters are used to specify the location of each column.

Rows

The rows headers are identified by numbers: '1,2,3,.....'. these numbers are used to specify the location of each row.



The number of worksheet columns and rows vary according to the Spreadsheet application version.

What are the types of data that can be located in a cell?

- Text data (letters or texts)
- Numeric data (numbers)
- Formulas (mathematical formulas).

The Table is formed of:

Each **Row** represents a Record, and each **Column** represents a Field, and each **Field** contains Data.

(Columns) أعمدة

أهم موانئها	عاصمتها	اسم الدولة
الأسكندرية وبورسعيد	القاهرة	مصر
جدة	الرياض	السعودية
الدار البيضاء	الرباط	المغرب

صفوف (Rows)

(Fields) حقول

أهم موانئها	عاصمتها	اسم الدولة
الأسكندرية وبورسعيد	القاهرة	مصر
جدة	الرياض	السعودية
الدار البيضاء	الرباط	المغرب

سجلات (Records)

(Field) حقل

أهم موانئها	عاصمتها	اسم الدولة
الأسكندرية وبورسعيد	القاهرة	مصر
جدة	الرياض	السعودية
الدار البيضاء	الرباط	المغرب

(Record) سجل

Topic four: Edit and design images

Image-editing software

Image-editing software is program that enables a user to create and edit pictures through many tools in a good, easy and fast way There are many programs that you can use for doing specific task as editing pictures, some of them are:

CinePaint (O/S Linux) ~ PicsArt (O/S Android) ~ Paint.NET (O/S Windows)

There are several Types of image files that have different extensions like:

Bmp ~ gif – eps ~jpg ~ pcx – png ~ wmf ~ tif ~ ..etc.

pictures are divided into two main types according to its processing inside the computer:

	vector	Raster
Based on	mathematical expressions	dot matrix data structure
Scaling	not affected by scaling	affected by scaling
Quality	image scaling doesn't reduce picture quality	image scaling reduce picture quality
Size	small storage size	large storage size

The Characteristics of some pictures types

Extension		
Raw	- can't support the animated picture and its transparency	- size of the picture is very big . - high quality compared with jpg.
Gif	- It is inadvisable to use it in saving pictures of high number of colors and gradients colors; in order not to be distorted	- supports animation and transparency - small sizes. This extension is an abbreviation of (Graphical Interchange Format

Bmp	<ul style="list-style-type: none"> - It is a type of fixed picture files that support neither transparency nor animation, 	<ul style="list-style-type: none"> - big size and high quality and high colors compared with gif. The .bmp extension is an abbreviation of (Bitmap).
Jpeg	<ul style="list-style-type: none"> - doesn't support neither animation nor transparency, 	<ul style="list-style-type: none"> - one of the most famous and widely used types compared with others; where the team of (Joint Photographic Experts Group) has developed it, - This type has other extensions: jpe and jpg. - Digital cameras support it - it has 16 million colors.
Png	<ul style="list-style-type: none"> - doesn't support animation 	<ul style="list-style-type: none"> - supports transparency - This extension is an abbreviation of (Portable Network Graphics).
Wmf	<ul style="list-style-type: none"> - doesn't support animation 	<ul style="list-style-type: none"> - supports transparency - based on mathematical expressions - not affected by scaling - scaling doesn't reduce picture quality - small storage size - This extension is abbreviation of (Windows Meta File).

Notes:

- ~ All of these types of pictures are **fixed except** for **gif** type. It can be fixed and **animated** pictures.
- ~ **Bmp , jpg , gif , png , wmf** are types of pictures that you can use in **Visual Basics.net** application.
- ~ There are many Applications Programs that manipulate different types of pictures according to its kind and its potentiality. **Some programs enable you to convert from a picture type to another.**
- ~ The picture file type "**bmp**" can be used with many **operating systems.**

Editing Picture

Set Picture size.

To set picture size is to change the **dimensions** of a picture (**height-width**) through the following steps:

- ~ Download one of Image editing programs.
- ~ Open Arab Republic of Egypt Picture Map file from folder Maps inside the Folder Atlas.
- ~ Change the size of the Map to suit the allocated area in the project, When you activate the picture, you find 8 points, through which you can change the dimensions of the picture.

Add effects to pictures.

From "**adjustment**" choose between "**border – shadow – black and white**"

Crop out part of the picture.

Sometimes we want to cut a certain part of the picture or delete some parts. In the picture map of "Arab Republic of Egypt", to cut part of it for example the capital, Cairo, we use the cut tool (**CROP**) from the **toolbar** of the Image editing program.



Saving a picture inside a file with a suitable extension:

After making the required modifications to the picture, save it with file name and with extension “gif” and saved it with the extension “jpg” inside the subfolder Maps in the main folder Atlas.

Animated picture

An animated picture is a collection of pictures that you have to insert one after the other in frames, inside a timeline. You adjust the interval between each frame; so that the pictures appear to be moving.

Topic Five: Creating and manipulating Sound files

Audio files

There are many audio files formats (extensions) such as: **wav**, **wma**, **mp3**.

The following identify the famous audio types.

Wav type:

Wave file format is of **high quality**, and often used to store information about uncompressed raw audio data. (Original sound, which has not gone through any file format, however, due to the amount of disk space that these files take up it, is not common to be published or posted on Web sites. **WAV files are universal, they can be utilized on many operating systems**, and modified (compressed and converted to other file type of small size but with low quality) by many Audio editing programs, and WAV means **(Wave form audio)**.

Wma type:

This type **is the higher quality and lower distortions type compared to .MP3** file, only few audio editing software and operating systems can support editing and manipulating (.wma)

file format knowing that .WMA files stands for (**Windows Media Audio**).

Mp3 type: (small size, low quality compared to WAV)

MP3 does not have nearly the same amount of quality as WAV file format, the MP3 format uses compression which actually save space and make the file smaller, it is not suitable for retaining "first generation" archived files.

In VB.net language, you can insert the appropriate controls in the (Toolbox) to play different types of Audio files.

Comparison	Filename.wav	Filename.mp3
Storage Capacity	Bigger Size	Smaller Size
The quality of the sound purity	High Quality	Low Quality

Audio editing software

Audio editing software are programs that include a collection of powerful tools to generate sounds, add audio effects, recording, editing and performing other audio processing that enable user to edit and process audio files in a great way, quick and easy. There are several programs that can be used for creating and editing audio files; cut large audio files, into parts, merge and editing them; some of them are:

☐ (Audacity) (O/S Windows- Linux)

☐ (WavePad) (O/S Android)

Using Audio Editing programs; you can make the appropriate manipulation to audio files like:

- **Delete** a portion of an audio file.
- **Cut** a portion of an audio waveform, and paste it in another location on the waveform in the same file or into another sound file.
- **Duplicate** a portion of the audio waveform (clip).
- **Add another audio file** into the current audio file.



- **Add effects** to specific clips or to the whole audio file like: amplify or reduce the sound volume.

Topic Six: Creating and Editing videos

Video files formats

There are different video file formats like: avi, wmv, gp , mp4.

3gp extension:

3gp video format produces a **small file size of low quality**; it is appropriate for mobile cameras and applicable with mobiles phones 'operating systems.

Avi extension:

Avi video format produces a **large file size of high quality** compared with other formats; Avi video format is appropriate to computers and video cameras.

Mp4 extension:

Mp4 video format produces **average file size of high quality compared with 3gp extension**; it is appropriate for Mp4 devices
In VB.net language, you can insert the appropriate controls in the (Toolbox) to run different types of video files.

Video Editing software

There is much video editing software available through the Internet that can be accessed from the following links:

- Kdenlive (O/S Linux)
- Video Maker (O/S Android)
- Movie Maker (O/S Windows)

First: importing files

1. Import images files:

Import image files for the most important “attractions in Egypt” from the sub folder "Pictures" under the main folder "Atlas"

2. Import the audio file:

Import the sound file of "attractions in Egypt" from the sub folder "Anthem" under the main folder "Atlas".

Second: Modify video clips (Add effects – writing texts).

1. To set an effect on the image:

Choose an effect and put it over one of the images in the *Time Line*, and then preview the image after adding the affect.

2- To set an effect on transitions between images clips:

Choose one of the effects and then place it between the video clips in the video Time line

3- To put Titles or Texts to different video clips:

Type the title of the video "Attractions in Egypt", this title appears in the *Time line* bar.

Third: Saving video clips in a file:

To save the video file on your computer:

- Locate the storage device.
- Save the file with the filename " مصر " in the sub folder "Videos" under the main folder "Atlas".
- Follow the rest of the saving steps that ends with displaying the video.

Topic seven: Establish Project's interface and, set Project's properties

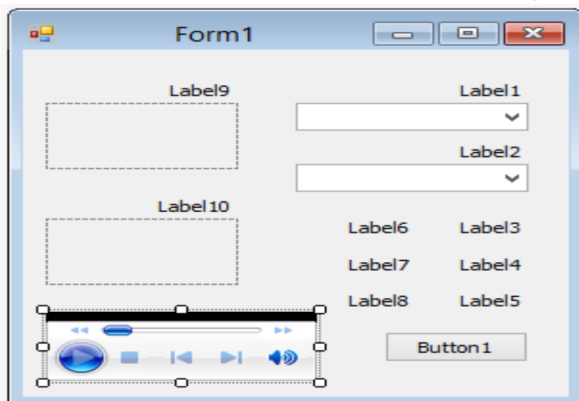




Create and design an interface for "(Electronic Arabic Atlas)" program.

To create and design an interface; follow the next steps:

- Open Visual Studio. net .
- Create a new project named "(Electronic Arabic Atlas)" program .
- Set the Controls, as shown in the shown figure:



On window form Form1; 10 Label controls and 2 ComboBox controls, 2 PictureBox controls and 1 Button control and 1 WindowsMediaPlayer are placed .



Adjust the property Name of some of the Controls displayed on Form1 window , as shown in the following table:

Name	Control
cmbbxContinent	ComboBox1
cmbbxState	ComboBox2
picbxMap	PictureBox1
picbxFlag	PictureBox2
lblDC	Label6
lblPorts	Label7
lblWR	Label8
btnStop_play	Button1
WMPlayer	AxWindowsMediaPlayer1

Note

The control AxWindowsMediaPlayer does not exist in the (Toolbox); it will be combined to this (Toolbox) as described in the steps below:

- Right Click using the mouse in the Toolbox and select (Choose Items).
- A dialog box appears displaying much tabulation.
- Select (com components) tabulation; then choose (Windows Media Player); and to close press (OK); this tool will be added to the (Toolbox).

To Set up a project; you should:

- (1) Determine the purpose of the project.
- (2) Collect and organize data for the project ;the same thing you did to collect data for "(Electronic Arabic Atlas)", where you created folders as follows : (Data from each country — the Flag of each country – A Video for "Tourist Attractions in Egypt" – An Anthem for each country – the Map of each country)
- (3) Design the User Interface of the project GUI.



(4) Select the controls that you want to use in the user interface (on the window form).

(5) Set the properties of the controls, such as:

Specify the controls that appear on the User Interface (window form), using the code:

`Object.Visible = True`

Specify the other controls which does not appear on the User Interface (window form), using the code:

`Object.Visible = False`

Adjust the SizeMode property of the PictureBox control, using the code:

`Picbxmap.SizeMode = StretchImage`

Topic eight: Reading data from an Excel sheet using Visual Basic.net



While writing program code in Visual Studio.NET, you will use certain terms and apply the main concepts that you studied last year.

• ADO (ActiveX Data Object):

It is an advanced technology that can be used to design "Controls" not as ordinary tools; but "Controls" that get access to databases over appropriate applications and develop applications and Programming Projects i.e (Windows Applications and Web Application) that manipulate data from a diversity of databases. Where; ADO.NET is a set of classes that provides access to multiple data sources; such as "Microsoft SQL Server, Microsoft Access, and Oracle ". This software's can create/manipulate databases; ADO.NET is a part of the Framework.

• Class:

A (Class) is the blueprint/ plan / template, from which the individual objects, are created. It is the blueprint that describes the details which any object takes (its Properties, Methods and, Events); and are derived from the (Class).

• Object:

An Object is characterized by:

- 1- The properties that describe and specify an Object.
- 2- The events that occur on an Object.
- 3- The methods or actions that an object can perform; upon the occurrence of a particular event.

An (Object) is the basic constructive element in Object Oriented Programming; it is created from a defined class. Thus an (Object) exists only after a certain (Class) has been created.

• Namespace:

A Namespace contains a set of related classes that can be used when needed.



• **Framework:** Is the platform for Visual Studio. NET applications that :

- 1- Enables developers to create applications like (Desktop applications , Web applications and Mobile applications).
- 2- Provides a development environment for running all applications.

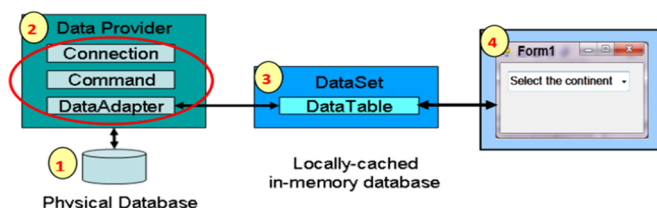
• **The Framework is composed of :**

- 1- The execution engine (CLR) Common Language Runtime.
- 2- The .NET class libraries (System Class Libraries).
- 3- (Compilers).
- 4- Other elements.

• **SQL (Structured Query Language) :**

It is a programming language designed for managing database files.

The following figures demonstrate the stages for retrieving data from a database saved in a storage medium, and converting it to a data table in the memory, and then display it in the appropriate object located on the interface window Form in Visual Basic.Net language.



Data Source: The source of data (A file located in a storage media or a table stored in the memory).

Provider: It is a link between the database and Visual basic. Each Database program has its own Data Provider (Connection, Command and, DataAdaptor).

Dataset: It is a Class from where we can create a variable: ds. This variable in the computer's memory represents database tables (Data Tables), which was brought from the data file into memory.

DataTable: We can create a variable out of this class: dt. This variable in the computer's memory represents a table for saving data (Data Table), which was brought from the data file.

Examples of select statement If you have a spreadsheet as follows:

Select: It is one of the SQL statements used to retrieve records from a table or from multiple tables in the database.

Example No 1:

Find the sum of the two numbers 8 and 10 using the Select statement.

Syntax: Select No1 + No2

Statement: Select 8 + 10

Output: 18

Example No 2:

Retrieve all records from a spreadsheet Table1 using the Select statement.

Syntax: Select * from TableName

Statement: Select * from Table1

Example No 3:

Show the "Continent" column from the data table Table1 using the Select Statement.

Syntax: Select FieldName from TableName

Statement: Select القارة from Table1

Example No 4:

Show the "Continent" column from the data table Table1 "without repetition using the Select Statement.

Syntax: Select Distinct FieldName from TableName

Statement: Select Distinct القارة from Table1

Example No 5:

Write the Select Statement required; displaying only the countries in " آسيا " continent from Table1.



Syntax:

Select FieldName from TableName Where Condition

Or:

Select [FieldName] from TableName Where Condition

Statement:

Select القاهرة ' = أسيا from Table1 Where الدولة

Or:

Select القاهرة ' = [أسيا] from Table1 Where [الدولة]

Note:

When using the Where Condition the value assigned to string constant is placed between quotations ' '.

Example No 6:

Write the Select Statement required; to retrieve the column "أهم" from the data table Table1.

Syntax :Select FieldName from TableName

Statement: Select [من أهم المواني] from Tabel 1

Example No 7:

Write the Select Statement required; to retrieve the two fields "الدولة" and "العاصمة" from the data table Table1.

Syntax Select [FieldName1], [FieldName2] from TableName

Statement Select [الدولة] ، [العاصمة] from Table1

Example No 8:

Write the Select Statement required; to get the number of countries from the data table Table1.

Syntax Select Function (*) from TableName

Statement Select Count (*) from Table1

Output: 10

Example No 9:

Write the Select Statement required; to get the number of countries in "أفريقيا" from the data table Table1.

Syntax Select Function (FieldName) from TableName.

Statement Select Count (الدولة) from Table1 Where أفريقيا = القاهرة ' ،

Output: 5

```
Function GetDataFromExcelSheet(FilePath As String, sql As String) As DataTable
```

```
End Function
```

How many operands are assigned to this function?

This function has 2 operands:

- ♣ "FilePath" that represents a path Excel file.
- ♣ "Sql" that represents a sentence through which we will inquire about the data from the Excel file.

This function returns a value of type DataTable inside the computer memory; that represents the data brought from Excel file.

- ♣ Declare the following variables:

- ~ The Variable "**MyConnection**" that allows opening a channel of communication in the worksheet that holds data in an Excel file.

- ~ The Variable "**MyCommand**" will perform a query by which you can get the data from an Excel file.

- ~ The Variable "**da**" will transfer data from an Excel file to the data Table of Variable "dt".

- ~ The Variable "**dt**" has a table for saving the data brought from the Excel file.

ComboBox control maintains two values: one of them is a shown value that is kept inside DisplayMember property and the other vaue is not shown; it's kept inside ValueMember property.